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Status quo of innovation enterprerial activity on regional level The Case of Slovak Republic^{*}

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One of the conditions for good and prosprious economy is innovation activity of its firms and enterprises. This condition is sine qua non especially in recent time characterised by strong global and regional economic movements. The main task of this paper was to offer a Picture, how is the situation of innovation ativity in enterprises in Sovk Republic. Two most important documents Lisbon Treaty and Innovation strategy for Slovak Republic are in sharpontrast ith exiting reality.

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Globalization and Regionalization

Globalization is a very broad economic movement, which stresses not only global flow of financial resources, but also internationalisation of entrepreneurship, promotes the competitiveness among domestic and foreign enterprises, substantially influences economic wealth in one country and diminishes economic wealth in other country. Globalization has its positive and negative side. Positive side of globalization is characterised by it, that it evaluates very quickly financial capital - it supports the role of multinational companies and flow of financial capital.

From this point of view starts to be more and more important the question of competitiveness of national economies or multinational companies and firms. Reflections on competitiveness are generally stronger when the developed countries identify the threat of losing their markets to new competitors (Daňková, Bosáková 2005). It means competitiveness starts to be fundamental base of development of each national economy .

Positive phenomena of globalization are connected with negative phenomena, especially, if we speak about small growth of GDP, growth of unemployment, because in spite of the growth of profits in enterprises we cannot see consequent growth in field of jobs or wages. We can see sharpening of differences among national economies - there do not exist generally accepted instruments, which will help to diminish these differences. This globalization phenomenon causes in one way the acceleration of world economy and in the other way economic retardation.

Regionalization is a moment accompanying globalization. It can concern also development of smaller geographical, economical and political units. In this sense we understand regionalization as a process of creating new territories on the base of socioeconomical homogeneity. Usually regionalization realizes in three phases : in geozoological, structural and operational one.

As we look on regionalization from the economic perspective, we can distinguish four dimensions: economic activities, infrastructure, trade and services and production. A term region has different meanings in different countries. Generally region is understood as a territorial unit, which is bigger than community and is governed by central administration. Regionalization is in this way very important socioeconomic movement keeping balance among serious economic and social influences , which exist among different parts of Europe and which must be rearranged by national and European strategies for regional development.

Globalization and regionalization movements influence substantially formation of knowledge society. Globalization supports formation of knowledge economy in most broader sense and regionalization in the real time space. Both those social and economic processes form active knowledge society, where is primarily important need for application of innovations.

With this new wave of regionalization concerning geopolitical changes observable on world stage , we may notice, that beginning of third millenium is millenium of regionalism, where we can find different forms of regionalization. This process influences new redefinition of terms and discussion on new regional paradigms, on possibilities for integration of regions, contents of regionalism and regionalization.

Innovations

Contemporary knowledge economy starts to have due globalization and regionalization new specific traits, what need to be investigated. Innovations, new information and knowledge play important role in recent economic development. Especially new information and changes have important impact on economy and cause new formulation in understanding of general economic theory.

.Innovations accelerate changes, which accelerate continuity in economic development, Innovations put to foreground special relation among firms and networking, based on the idea of partnership. Partnership starts to be more and more important- it helps also to keep continuity in economic development.

Partnership puts to foreground social capital , which must work with norms of reciprocity and trust. This partnership is very important especially for cooperation among clustering firms. Knowledge and information in firms are accumulated through clustering of firms . This movement supports local competitiveness of firms and possibility of their multiplicative productive effect, which in reality emerges not as an outcome of one individual firm, but as a joint activity of different firms. Clusters also support innovativeness of firms and certain cooperation with strategically and conceptually performed innovation infrastructure.

Innovations support mushrooming among firms, but on the other hand cause disequilibrium in economy. This disequilibrium has different features: In one location we can see clusters of innovative firms and in different environment we see location without any innovative firms.

Innovation environment in general

We can see recently foundation of new innovation institutions and agencies, which primarily work with new research and different proinnovative tasks. One of the most efficient ways how to develop innovations is foundation of institutions and firms which are understood as incubators of innovations. These institutions create new type of partnership among universities, individuals, firms.

Process of new knowledge application needs new cooperation among people in firms and organizations and consequently flexible management. Partnership among universities and enterprises and innovation agencies supports networking and indirectly development of small and medium enterprises. Vice versa it raises strong feedback addressed to universities and technical schools as claims for upgrading their own curriculum.

Partnership supports also formation of clusters. Clustering of firms is combined with new understanding of innovations- in previous period innovations were understood as outcome of linear process. In recent period due existence of these clusters was formulated new concept of innovations. It is necessary to understand innovations in much more diffused and non-linear environment. The new understanding of innovations was systematically classified and described as national innovation system.

This national innovation system works with more broad definitions of innovations –it is based on the idea to include to innovation system different innovation applications and many institutions and agencies. This new understanding is based also on activity of different governmental and public organizations, research and technological institutions and different knowledge oriented trade enterprises.

Regionalization and innovations (case of Slovak Republic)

Slovak Republic is a country, where are noticable two parallel socioeconomic developments: development concerning modernisation of industrial type of society and also development concerning building of information and knowledge society. Dispositions for development of knowledge society are varied in different parts and regions of Slovakia, because Slovakia is typical for its sharp regional differences and disparities. The mansidedness of contemporary socioeconomic situation is based on existence of many important risks, which are connected with very controversial economic developement due regional disparities (influenced by the existence of strongly marginalized regions and subregions in Slovakia). This extreme situation is combined with risks accompanying sharpening of regional disparities from the point of view of quality of human potential.

In Slovak Republik we can distinguish innovation policy of first, second and third generation. Innovation policy of first generation was based on judicial, regulative and financial frame of innovation activities. This type of innovation policy is represented by statement, that innovations are outputs of basic and applied research and development. Innovation policy of second generation is based on idea, that innovations could be defined as outputs of special system approach, which is characterised by special strategic support - we do not speak only about research and developement, but about foundation of such institutions as are incubator and

industrial technological centres. Innovation policy of third generation was formulated in such a way, that innovations must be integral part of all economic policies (industrial, social, economic etc.)

In spite of these official recommendations, it is important to stress, that in Slovakia does not exist form of unified innovation strategy. Two Ministeries - Ministry of Education of SR and Ministry of Economy of SR and also different agencies take some real meassures, but not in coordination. This non systematical approach causes, that real problem concerning innovations in Slovak republic is not solved generally .

All these problems result in very weak and not concentrated relation between basic research institutions, applied research institutions and entrepreneurial sector. In Slovak Republic there does not exist vertical coordination between national and regional innovation system , which will guarantee existence of initiatives reacting on specifical regional conditions from buttom up. Official strategical aim of innovation policy in Slovak Republic untill 2013 is, that innovations must represent one of the most important instruments in development of new knowledge economy. Foundation of national innovation system must be finished in Slovak Republic at the latest untill 2013. This national system will include regional innovation structures (incubators, innovation centres, consulting centres etc.), which will support development of knowledge economy in Slovak Republic.

Innovation strategy includes 3 priorities:

- First priority: Very qualified infrastructure and effective system for development of institutions
- Second priority : Good human resources
- Third priority: Effective instruments for innovations

Strategy to support innovative measures and infrastructure started to be systematically realized after acceptance of Strategy for development of competitiveness for Slovakia until 2010. One of the reasons, why the strategy was not effective, was institutional preference of technology transfer. Official infrastructure for support of innovations was not supported from one simple reason. Due flow of foreign direct investment were allocated majority of financial means to technology transfer and not to creation of new innovations through allocation and direct investment to research and development.

In spite of it Slovakia signed the Lisbon treaty, its official innovation policy is not reflected in reality. The unefficient allocation of financial means for research and development and also for education is very appreciable and sharp. Slovak Republic was proud of its very well organized research and development and for its good results in the field of education (namely secondary and tertiary).

This situation is very alarming and reveals a very unpleasant fact that realization of domestic GDP is not supported by creation of innovations from domestic sources. In spite of it mostly majority of official activities supporting creation of innovations come from ministries and not from bottom up organizations. This type of support is in spite of it not sufficient - share of public expenditures allocated to research and development in relation to GDP was constantly decreasing from 1996 to 2003 – from the level 0,40% of GDP to 0,21% of GDP in Slovakia - what is one of the lowest shares in Europe .

If we compare allocation for resources for research and development in different countries in Europe, we see Slovak Republic is in red numbers in statistical ranking and very small number of European countries are behind (table 1).

Table 1. Gross domestic expenditure on R&D

| Country | 2005 | 2006 | 2007 | 2008 |
|------------------|------|------|------|------|
| EU 27 | 1.82 | 1.82 | 1.85 | |
| EU 15 | 1.88 | 1.92 | 1.93 | |
| Euro era | 1.83 | 1.86 | 1.87 | |
| Belgium | 1.84 | 1.88 | 1.87 | |
| Czech Republic | 1.41 | 1.55 | 1.54 | |
| Denmark | 2.46 | 2.48 | 2.55 | |
| Germany (ex GDR) | 2.48 | 2.54 | 2.54 | |
| Estonia | 0.94 | 1.15 | 1.14 | 1.25 |
| Ireland | 1.25 | 1.3 | 1.31 | 1.45 |
| Greece | 0.58 | 0.57 | 0.57 | |
| Spain | 1.12 | 1.2 | 1.27 | |
| France | 2.1 | 2.1 | 2.08 | |
| Italy | 1.09 | 1.13 | | |
| Cyprus | 0.4 | 0.43 | 0.45 | |
| Latvia | 0.56 | 0.7 | 0.59 | |
| Lithuania | 0.75 | 0.79 | 0.82 | |
| Luxembourg | 1.56 | 1.66 | 1.62 | |
| Hungary | 0.94 | 1 | 0.97 | |
| Malta | 0.57 | 0.61 | 0.59 | |
| Netherlands | 1.72 | 1.71 | 1.7 | |
| Austria | 2.44 | 2.46 | 2.56 | 2.66 |
| Poland | 0.57 | 0.56 | 0.57 | |
| Portugal | 0.81 | 1 | 1.18 | |
| Romania | 0.41 | 0.45 | 0.53 | |
| Slovenia | 1.44 | 1.56 | 1.45 | |
| Slovakia | 0.51 | 0.49 | 0.46 | 0.20 |
| Finland | 3.48 | 3.45 | 3.47 | 3.46 |
| Sweden | 3.6 | 3.74 | 3.6 | |

Source of Data:Eurostat, last Update 14.07.2009

The boarder line for Lisbon strategy represent value of 3 percent allocated from GDP for R&D in different countries. This boarder line means positive indicators only for Finland and Sweden from Europe

What concern education, it is interesting to compare datas from different countries, and see the real situation in Slovak Republic.(table 2)

Table 2. Total Public Expenditure on Education as a Percentage of GDP

| Country | 2003 | 2004 | 2005 | 2006 |
|----------------|-------------|-------------|-------------|-------------|
| EU 27 | 5.14 (s) | 5.06 (s) | 5.04 (s) | 5.05 (s) |
| Belgium | 6.05 (i) | 5.99 (i) | 5.95 (i) | 6.00(i) |
| Bulgaria | 4.23 | 4.51 | 4.51 | 4.24 |
| Czech Rep. | 4.51 | 4.37 | 4.26 | 4.61 |
| Denmark | 8.33 | 8.43 | 8.30(i) | 7.98(i) |
| Germany all | 4.70 | 4.59 | 4.53 | 4.41 |
| Estonia | 5.31 | 4.94 | 4.92 | 4.80 |
| Ireland | 4.39 | 4.70 | 4.75 | 4.86 |
| Greece | 3.58(i) | 3.82 (i) | 4.00 | – |
| Spain | 4.28 | 4.25 | 4.23 | 4.28 |
| France | 5.90 | 5.79 | 5.65 | 5.58 |
| Italy | 4,74. | 4.58 | 4.43 | 4.73 |
| Cyprus | 7.29(i) | 6.70(i) | 6.92(i) | 7.02(i) |
| Latvia | 5.32 | 5.07 | 5.06 | 5.07 |
| Lithuania | 5.16(i) | 5.19(i) | 4.90(i) | 4.84(i) |
| Luxembourg | 3.77(i) | 3.86(i) | 3.78(i) | 3.41(i) |
| Hungary | 5.86 | 5.43 | 5.46 | 5.41 |
| Malta | 4.70 | 4.82 | 6.76 (b) | – |
| Netherlands | 5.42 | 5.46 | 5.48 | 5.46 |
| Austria | 5.57 | 5.52 | 5.46 | 5.44 |
| Poland | 5.35(i) | 5.41(i) | 5.47(i) | 5.25(i) |
| Portugal | 5.57(i) | 5.29(i) | 5.39(i) | 5.25(i) |
| Romania | 3.45 | 3.28 | 3.48 | – |
| Slovenia | 3.45 | 3.28 | 3.48 | — |
| Slovakia | 4.30(i) | 4.19 (i) | 3.85(i) | 3.79 (i) |
| Finland | 6.42 | 6.42 | 6.32 | 6.14 |
| Sweden | 7.30 | 7.18 | 6.97 | 6.85 |
| UK | 5.24(i) | 5.16(i) | 5.37(i) | 5.48(i) |

Slovak Republic does not have very much developed sphere of innovations in services (especially the third generation of innovation policy needs to support this negative tendency)(table3)

Table 3. Share of Innovations with Innovation Activity according Technological Sectors

| Technological Sectors | 2001 | 2003 | 2004 | 2005 |
|-------------------------|------|------|------|------|
| Manufactory Industry | 22.5 | 23.1 | 27.3 | 27.4 |
| In it | | | | |
| high- tech | 39.7 | 34 | 46.4 | 43.7 |
| Medium high tech | 27.1 | 32.9 | 33.9 | 34.9 |
| Medium low tech | 22.1 | 23.6 | 26.1 | 25.1 |
| low tech | 19.5 | 17.8 | 23.7 | 24.0 |
| Services together | 15.9 | 15.0 | 17.9 | 22.6 |
| Including | | | | |
| Services with high tech | 31.5 | 40.5 | 35.8 | 48.8 |

Statistical Office SR 2009 <http://portal.statistics.sk/showdoc.do?docid=5689>

Most financial means for innovations are allocated in the sphere of industries (table3) Application research was concentrated in large factories and enterprises and still is, but is missing organized innovative management and good strategy to support it substantially (table 4).

Table 4. Innovation indicators

| Indicators | 2001 | 2003 | 2004 | 2006 |
|---|------|------|------|------|
| Share of enterprises with innovation activity in industry and selected services | 19.5 | 19.4 | 23.2 | 25.1 |
| Small enterprises | 15.1 | 14.6 | 16.3 | 19.2 |
| Medium enterprises | 24.4 | 24.2 | 34.8 | 34.4 |
| Large enterprises | 46.8 | 47.5 | 58.0 | 56.0 |
| | | | | |
| Share of expenses on innovations from total sales in % | 5.7 | 3.6 | 3.2 | 3.0 |
| | | | | |
| Structure of expenses for innovations in % | | | | |
| Internal research and development | 6.8 | 6.6 | 8.1 | 8.3 |
| External research and development | 2.5 | 2.8 | 2.2 | 3.8 |
| Machines and arrangements | 77.0 | 60.9 | 84.5 | 85.5 |
| Management of External knowledge | 4.7 | 22.1 | 5.2 | 2.4 |
| Expenses for preparatory phase for production and market | 9.0 | 7.6 | - | - |

Statistical Office SR 2009 <http://portal.statistics.sk/showdoc.do?docid=5695>

In spite of this statement, that in Slovak Republic limited share of expenditures allocated for research and development in industry and most financial means is allocated for import of technologies...For instance only 7% is allocated for this type of research and 89% for import of technologies (machines) from abroad. (Slovak statistical Office). In Czech Republic is share of similar expenditures 22% and 47% (Czech statistical Office, 2005). In EU countries it is 36% and 21 % (Eurostat 2008).

Innovation Environment in Slovak Republic

It is interesting to have a look on application research and its link with innovation activity in enterprises. In this way the situation is still alarming (table 5)

Table 5. Share of enterprises with innovation activity from total number of firms in % Together Industry and Services

| | Together | | Industry | | Services | |
|------------------------------------|-----------------|------|-----------------|------|-----------------|------|
| Innovation Activity | 2004 | 2006 | 2004 | 2006 | 2004 | 2006 |
| All innovation activity | 23.2 | 25.1 | 25.8 | 26.8 | 17.9 | 22.6 |
| Successful innovations | 22.2 | 23.9 | 25.8 | 25.4 | 17.0 | 21.6 |
| Product innovations | 4.6 | 5.6 | 5.9 | 6.3 | 17.0 | 21.6 |
| Process Innovations | 7.2 | 8.4 | 8.5 | 9.0 | 5.3 | 7.6 |
| Product and process innovations | 10.4 | 9.9 | 11.4 | 10.1 | 9.0 | 9.4 |
| Not finished Innovation activities | 1.0 | 1.2 | 1.1 | 1.4 | 0.9 | 1.0 |
| Firms without Innovation activity | 76.8 | 74.9 | 73.1 | 73.2 | 82.1 | 77.4 |

Statistical office Slovak Republic <http://portal.statistics.sk/showdoc.do?docid=5687>

It is interesting to analyze different reasons, why the situation in different enterprises is so alarming, what are the main factors preventing enterprises for innovation activities (table 6)

Table 6. Share of enterprises explaining factors preventing them to be innovative in %

| | <i>Firms with innovative activity</i> | | <i>Firms without innovative activity</i> | |
|--|---|------|--|------|
| Factors preventing innovations | 2004 | 2006 | 2004 | 2006 |
| Economic factors | | | | |
| Shortage of financial resources | 41.7 | 32.4 | 33.6 | 29.8 |
| Extremely high costs for innovation | 21.5 | 20.3 | 22.6 | 21.2 |
| Internal factors | | | | |
| Shortage of qualified employees | 8.4 | 8.8 | 5.8 | 7.5 |
| Information about Technologies-shortage | 2.3 | 1.8 | 2.2 | 2.1 |
| Information about markets-shortage | 4.2 | 1.9 | 2.2 | 2.1 |
| Difficulty to find partners for innovation cooperation | 7.3 | 5.4 | 12.5 | 11.5 |
| Other factors | | | | |
| Dominance of strong firms | 14.5 | 11.8 | 12.5 | 11.5 |
| Unsure demand for innovative products and services | 12.1 | 8.8 | 13.4 | 9.7 |

Statistical Office 2009 <http://porta.statistics.sk/showdoc.do?docid=5699>

What is promising and does not see too pessimistic is willingness of innovative firms and enterprises to cooperate with other different types on the bases of partnership and networking. (table 7)

Table 7. Share of enterprises with innovation activity and importance of partnership for them in %

| Type of partnership | 2001 | 2003 | 2004 | 2006 |
|--|------|------|------|------|
| Enterprise clusters | 16.8 | 22.2 | 15.6 | 14.1 |
| Machinery, component, software suppliers | 43.0 | 34.8 | 39.1 | 32.4 |
| Clients and customers | 35.3 | 32.8 | 29.8 | 26.3 |
| Competitors and other firms in the same sector | 15.4 | 6.9 | 5.7 | 22.6 |
| Consultants, commercial laboratories, | 15.4 | 20.6 | 6.0 | 18.4 |
| Universities | 10.5 | 9.1 | 1.8 | 14.3 |
| Governmental and public institutions | 8.0 | 22.2 | 15.6 | 14.1 |

Statistical Office 2009 <http://portal.statistics.sk/showdoc.do?docid%5702>.

The value of SII – general innovation index reflecting general innovation capacity of each country, has Slovak Republic 37% of value of most developed EU countries.

We think it is necessary to support research and development from EU structural funds for years 2007-2010, where is supposed to spend yearly for research and development more than 173 million EUR- what represent 80% of expenditure for year 2006 for Slovak Republic. It is very important to avoid increasing tendency of brain drain especially of young people, which represent recently 11% of young students leave yearly Slovakia.

When we speak about the innovation environment, we can see the inclination of firms for more cooperation and partnership is visible, so the core of industry is inclined for new cooperation (but we cannot be satisfied also with this status quo). What is still important and is not fulfilled, is active coordination of innovation infrastructure- one of the ways out is good and efficient use of European structural funds.

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